National park Service
U.S. Department of the Interior

Big South Fork National River and Recreation Area
Oneida, Tennessee

Finding of No Significant Impact

For the
Fire Management Plan

September 2004

U.S. Department of the Interior
National park Service
Big South Fork National River and Recreation Area
Kentucky and Tennessee

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Background and Need for the Fire Management Plan

In the ten years between 1991 and 2001, 36 wildland fires were suppressed on NPS lands in Big South Fork National River and Recreation Area (NRRA). Records indicate that 7,317 acres were burned (Shared Application Computer System 2001[1]). Service policy requires that all National Park Service (NPS) units with vegetation that can sustain fire have an approved Fire Management Plan (FMP). All FMP's must relate fire management objectives with firefighter and public safety and natural and cultural resource management objectives. The Wildland and Prescribed Fire Management Policy directs federal agencies to achieve a balance between suppression to protect life, property and resources, and fire use to regulate fuels and maintain healthy ecosystems.

Fire has long been recognized as a disruptive force in nature that can impact vegetative structure and species composition, as well as the animals that depend on these habitats. The role of natural fire in the environment has been obscured over the past several centuries due to the intervention of Native Americans and Europeans (Martin 1989). Additional agents of change over the past century and a half such as logging and agricultural practices have resulted in an area covered almost entirely with second-growth forests that are less than 100 years old (Byrne 1964, Campbell and Newton 1995).

Many state-listed plants occurring in the Big South Fork region, some more common only decades ago, are rare today because of the absence of fire (Campbell et al. 1990). As recently as the mid -1980's, several colonies of the fire adapted, federally endangered red-cockaded woodpecker (*Picoides borealis*) were found within a twenty-mile radius of the park, with some colonies in the immediate vicinity (USDA Forest Service 1995). In 1994, five known active clusters were located on the Daniel Boone National Forest that adjoins the park (Costa and Walker 1995).

Of the 145 endangered and threatened rare plant species in the United States, 134 benefit from fire or are found in ecosystems adapted to fire (EPA 1999). The federally endangered American chaffseed (*Schwalbea americana*), for example, is a species that exists on sandstone knobs and inland plains where frequent, naturally occurring fires maintained these sub-climax communities (USDA Forest Service 1995). There were several historical collections of the plant in Tennessee and Kentucky, including a 1935 collection by Braun from a "sandstone knob" along the Alum Creek Road (KY 700) in the vicinity of the park (Campbell 1990b). Repeated searches for this species have been unsuccessful. Fire maintained grassland communities (such as barrens) having a relatively high diversity of native species, once more common in size and extent, are now restricted to a few patches along old backcountry road margins, and will soon be extirpated (Campbell, et al. 1990a). The loss of these communities has had an adverse impact on grassland birds and other associated species (Campbell, et al. 1990a).

Wildland fire may also have an adverse impact on the environment. Certain plant communities and animal species occupy sites that seldom, if ever support wildland fire. In some cases these sites can be relatively small (Leon Konz, personal communication). Wet sites such as swamps and bogs and microsites below seeps and springs, moist north facing slopes, mixed mesophytic communities, and riparian areas along streams or rivers are a few examples. In other cases, the long-term exclusion of wildland fire has resulted in plant communities that have so altered a site that the area can only tolerate low intensity fire (e.g.: a Red maple [*Acer rubrum*] dominated stand) (Olson 1998, USDA Forest Service 1998).

[1] See the environmental assessment for complete bibliographic references.

During periods of drought or abnormal environmental conditions (low relative humidity, high winds, low fuel moisture), wildland fire can consume duff and kill vegetation in wetter sites that would not burn under normal conditions when the site would be too moist to burn. Similar effects can occur if an area burns too frequently under a variety of conditions or during hot, dry conditions when wildfires have the potential to ignite the overstory tree crowns. The results can be dramatic. Wildland fires under the previously described conditions can result in high levels of tree mortality and open the area to invasion by other species, thereby changing the entire plant and animal species composition (Olson 1998). Secondary changes as the result of wildland fire under adverse conditions may include impacts to water and air quality, the creation of even-aged stands, insect invasion and fungal impact, and the loss of plant and animal species diversity.

Big South Fork NRRA is significant as a cultural landscape because it preserves examples of development patterns unique to the upper Cumberland Plateau. As of this writing, four landscapes located in the park are eligible for listing in the National Register. The park is required by Service policy to maintain these cultural landscapes. However, the associated fields and pasturelands are slowly being lost to the invasion of exotic species, and the encroachment of woody species, and the structures are at increasing risk from wildland fires as brush and other vegetation encroaches.

In addition, levels of hazard fuels exist due to southern pine beetle infestations and recent winter storms, which produced acres of heavy accumulations of dead, and down timber, often arranged like jackstraws. The presence of these and other heavy concentrations of fuels near the boundary or adjacent to oil wells and tank farms can make the management and control of wildfires difficult, and place fire suppression forces and the public at risk.

Given the issues described above, the Big South Fork NRRA needs a FMP that utilizes a range of fire management strategies consistent with current knowledge. The long-term objectives for this action are to reintroduce fire as a natural ecological process and restore habitats to meet specified resource objectives, while addressing fire fighter safety, protection of park resources and developments, and surrounding land uses. An environmental assessment was prepared to analyze the suppression of unwanted ignitions, introduction of fire on a limited basis to achieve management objectives, and hazard fuel reduction in specific areas.

Alternatives Considered

The NPS considered three alternatives in the environmental assessment process. Basic descriptions of these alternatives are provided below.

Alternative A – No Action. Suppress all wildland fires.

Under this alternative, no changes from current procedures would be implemented. All wildland fires would be managed using an appropriate management suppression response. Fire suppression personnel would, in a cost-effective manner, seek to limit the spread of a fire as quickly as possible, while ensuring public and firefighter safety and protecting the park's natural, cultural and historic resources, and private and other public property.

Mechanical hazard fuel reduction to achieve resource management objectives would be used on a limited basis (in fields, along park boundaries, and to protect structures). Prescribed fire would not occur under this alternative.

Alternative B – (Preferred) Suppress all wildland fires and use prescribed fire to achieve resource objectives.

Alternative B, the agency preferred alternative, is the selected alternative. Under this alternative, wildland fires will receive an appropriate management suppression response. Management-ignited prescribed fire will be used to reduce accumulations of hazard fuel and meet resource management objectives including the maintenance of cultural landscapes, the control of exotic species, and restoration of native habitats.

Prescribed fire will only be used when the prescriptive parameters are met. A prescription includes measurable criteria that define conditions under which a prescribed fire may be ignited. These criteria include fuel moisture, weather parameters, holding and contingency forces, ignition sequence, desired fire behavior characteristics, air quality, public health considerations, and measures to be taken and techniques to be used to reduce the impacts of the operation. Pre-burn and post-burn monitoring will be used to determine if treatment objectives are being met.

Based on the training and experience level of the park staff and the projects identified to date, prescribed fire will be used to treat an average of 800 acres annually over the next five years. During that period of time, Big South Fork NRRA will identify additional units for treatment to meet resource management objectives. A list of proposed prescribed fire treatment areas that have been identified to date and a map of their locations can be found in the appendix of the environmental assessment.

The NPS will develop a plan for monitoring fire effects prior to implementing any prescribed fire. Monitoring results will be used to fine-tune prescriptions, as necessary, to ensure that resource management objectives are achieved.

Alternative C – Full use: Use the full range of fire management options available for fire suppression, ecosystem restoration, and hazard fuel reduction.

Under this alternative, human-caused wildland fires would receive an appropriate management suppression response. Prescribed fire and mechanical hazard fuel reduction would be utilized as outlined in Alternative B to reduce the likelihood of wildland fire negatively impacting park resources or spreading onto other public and private lands. Prescribed fire would be used to a greater extent than indicated in Alternative B to maintain cultural sites and restore fire to the ecosystem when appropriate, based on further studies of the fire ecology of the park.

The major difference between this alternative and Alternative B is that under this alternative, a lightning-caused wildland fire occurring in the park would receive appropriate management response based on prescriptive parameters that consider potential benefits to resources that may occur as a result of the fire. Predetermined control objectives would allow lightning-caused fires to burn within current and predicted weather parameters. This would ensure the fire would meet stated resource objectives in a predetermined area. Lightning-caused wildland fires ignited outside the prescriptive parameters would be suppressed.

Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the CEQ. The CEQ provides direction that "the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101 . . . ."

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations
- Assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences
- Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Following environmental analysis, the environmentally preferred alternative is the alternative that causes the least damage to the biological and physical environment or that best protects and enhances the natural, historic, and cultural resources of the site. This means that following environmental analysis, it is the alternative that causes the least damage to the biological and physical environment or that best protects and enhances natural, historic, and cultural resources of the park. Alternative B (the preferred alternative) surpasses the other alternatives in best realizing the full range of national environmental policy goals as stated in § 101 of the NEPA, therefore Alternative B is the environmentally preferred alternative. Because so little is known about past fire history and the role fire played in the area, the environmentally preferred alternative at this point in time is the one that includes suppression, mechanical hazard fuel reduction and management-ignited prescribed fire to achieve cultural and resource management objectives.

When further fire ecology studies are completed and the role fire plays in this ecosystem is more clearly defined, it may be appropriate to revise the plan to include wildland fire to achieve resource management objectives. If that were the case, a new Environmental Assessment or Environmental Impact Statement would be prepared in compliance with the National Environmental Policy Act of 1969 and its implementing regulations.

Environmental Protection

The following mitigation measures, developed during the planning process and incorporated from the biological and environmental assessments, are intended to protect sensitive species, restore native habitats, and prevent impairment of park resources. They will be carried forth as conditions in each prescribed burn plan burn and as directives during the fighting of wildland fires.

1. Cross-country use by vehicles during fire management operations will only be permitted with the approval of the Superintendent.
2. The use of motorized transportation is prohibited in the gorge except in emergencies.
3. The use of dozers and other ground disturbing equipment will only be permitted with the approval of the Superintendent, unless life or private property is immediately threatened.
4. Natural topographic boundaries (e.g., ridge tops, streams) and existing trails/roads will be used as fire control lines where feasible. Leaf blowers and burn-out zones will be used to create fuel breaks, thereby reducing the need to dig hand lines.
5. Fire management personnel will rehabilitate fire lines after the fire management operation is completed to reduce or eliminate soil loss through erosion.
6. The use of aerial retardant will only be considered upon immediate threat to life or developments. Retardant use will be consistent with Interagency Standards for Fire and Fire Aviation Operations (Interagency Standards for Fire and Fire Aviation Operations Task Group 2004) except where the park has developed more stringent requirements. Every effort will be made to maintain a minimum 300-foot retardant exclusion zone around all seeps, Clear Fork River, New River, Big South Fork River and all tributary streams, as outlined in the Standards. In the section of river bounded on the south by North White Oak Creek and bounded on the north by the confluence of Bear Creek, the retardant exclusion zone will be extended to the natural gorge boundary for the Big South Fork River and to portions of major tributaries (Troublesome Creek, Difficulty Creek, Williams Creek, No Business Creek, Parch Corn Creek, Station Camp Creek, Laurel Fork of Station Camp, North White Oak, Laurel Fork of White Oak Creek) (see Figure 1 from the biological assessment). In all zones, retardant may be used in emergency situations that involve potential loss of human life. Retardant may also be used to prevent destruction of park developments (Headquarters complex, Bandy Creek complex, Station Camp Horse Camp, Bear Creek Horse Camp, Blue Heron complex) or consumption of structures associated with identified cultural landscapes (Lara Blevins, Litton-Slaven, Oscar Blevins). However, because of the proximity to the creek, retardant will not be used on the Charit Creek cultural landscape, except when human lives are threatened. Instead, mechanical fuel reduction will be used to create a fire break around Charit Creek, thereby reducing the need for retardant use in the event of wildland fire in the vicinity.
7. The Biological Assessment for the Fire Management Plan details mitigation measures that will be taken in the event of accidental chemical retardant inputs to streams that support threatened and endangered species.
8. Hazard-fuel breaks will be maintained along portions of the park's wildland-urban interface (WUI). These WUI buffers are intended to reduce the risk of wildland fire to private property adjacent to the park. Properly maintained WUI buffers will increase the potential to contain wildland fires within park boundaries, thereby reducing the potential need for retardant use. WUI breaks will be created and maintained using prescribed fire and mechanical means.
9. Prescribed fire treatment areas will not be designated in areas of the park where there is high potential for coal fires or fires that may adversely impact oil and gas facilities.
10. When available, a Resource Advisor will respond to wildland fires and report to the Incident Commander (IC). The Resource Advisor will use GIS and knowledge of the resources to advise the IC of potential impacts of the fire and proposed suppression tactics on threatened and endangered species/habitat.
11. Periodic and post-treatment monitoring of threatened and endangered species and habitats will be implemented to allow for careful analysis of treatment effects. Future management actions will be adapted to reflect the better understanding of fire effects provided through monitoring.
12. NPS will develop a burn plan for each proposed prescribed burn or group of prescribed burns.

13. NPS will complete Section 7, Endangered Species Act consultation with the U.S. Fish and Wildlife Service to evaluate prescribed burn plans.
14. NPS will regularly provide to U.S. Fish and Wildlife Service updated monitoring data on threatened and endangered species in or near fire treatment areas.
15. Prescribed burns will not be conducted under conditions favorable to the formation of ozone.
16. Prescriptive elements in prescribed burn plans will specify the proper conditions necessary to increase smoke dispersal and enhance burning, thereby reducing impacts from smoke.
17. All prescribed burns will be conducted in accordance with regulations established by the Commonwealth of Kentucky, the State of Tennessee and the Clean Air Act.
18. Vegetation will be protected adjacent to streams and other water courses.
19. Prescribed burns will be implemented with appropriate consideration given to the historical role of fire and the potential impacts of its reintroduction to a given plant community.
20. Due care will be taken to avoid impacts to ground nesting birds and other wildlife during sensitive periods. Additional protection will be afforded federally listed animal species (see mitigations detailed in the Biological Assessment for the Fire Management Plan).
21. Known locations of federal and state listed species will be protected during wildland fire suppression operations unless it is known that fire enhances a particular species.
22. All known listed species in a burn unit will be evaluated prior to a prescribed burn. Measures to protect listed species will be identified in prescribed burn plans and in a site-specific, pre-attack wildland fire suppression plan.
23. During wildland fire suppression operations, an archeologist or cultural resource specialist will be assigned to provide guidance to suppression forces.
24. To effectively preserve any archeological resources that may be threatened by actions proposed in the FMP, all of the proposed fire treatment areas will be investigated and assessed by an archeologist to determine the presence and integrity of any archeological resources. Any archeological sites or resources that retain archeological integrity will be avoided or protected with fire breaks. Cultural site protection efforts could range from avoidance to assigning engines to protect structures and other cultural features that could be damaged by fire.
25. All prescribed fire management activities near National Register eligible structures and Cultural Landscape features will be coordinated with the Cultural Resource Specialist.
26. The concurrence of the appropriate State Historic Preservation Officer (SHPO) will be obtained prior to prescribed fire management activity in all Cultural Landscapes.
27. When it is necessary to close an area to provide for visitor protection during fire operations, all affected trailheads will be signed so that closures will be easily recognized.
28. Measures to be taken to provide for visitor safety, such as posting traffic warning signs and public notices, will be identified in the prescribed burn plan.
29. Interpretive programs will be presented, when appropriate, to better inform the public of the role of fire in the ecosystem and how fire can be used to accomplish management objectives.
30. The park will work with adjacent landowners and the Forest Service to coordinate activities so that the visiting public will be impacted as little as possible.

In addition, the biological assessment for the FMP contains mitigation measures specific to federal candidate, threatened, and endangered species. These mitigations will be incorporated into individual prescribed burn plans if that species is known to be present in or near the affected area.

Implementation of the Fire Management Plan

The following actions will be taken for all management-ignited prescribed burns:

- Completion, prior to burning, of a prescribed burn plan that incorporates mitigation measures from the biological assessment specific to federal candidate, threatened and endangered species.
- Coordination with U.S. Fish and Wildlife service on each prescribed burn plan.
- Completion of a Department of Interior National Environmental Policy Act categorical exclusion for prescribed burning.
- Compliance with all mitigation measures listed in this Finding of No Significant Impact, excluding those that are specific to wildland suppression only (# 8, 10, 21, 23).

Significance Criteria

The selected alternative will not have a significant effect on the human environment. Significance is determined by the ten criteria defined in 40 CFR 1508.27. A discussion of each of these criteria follows:

1. *Impacts that may be both beneficial and adverse*. Implementation of the selected alternative will have negligible impacts to visitor use; adverse, minor impacts to air quality, water quality, and aquatic species; and beneficial impacts to soils, vegetation, wildlife, sensitive plant species, and cultural resources. Vegetation and sensitive plant species will benefit the most from the implementation of the FMP; impacts will be beneficial and moderate to major.

2. *Degree of effect on public health and safety*. Public health and safety will benefit from implementation of the fire management plan due to reduction of hazardous fuels in and on the boundary of the park.

3. *Unique characteristics of the area such as historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas*. Cultural landscapes will be improved through the removal of woody vegetation and the reduction of hazardous fuels. Other unique characteristics of the area will not be impacted.

4. *Degree to which effects on the quality of the human environment are likely to be highly controversial*. The NPS received three comment letters on the Environmental Assessment: two from the U.S. Fish and Wildlife Service expressing concerns and one from the Tennessee State Historic Preservation Officer with no concerns. The concerns from the U.S. Fish and Wildlife Service have been addressed and their recommendations have been incorporated into the FMP. Implementing this project is not known to be controversial.

5. *Degree to which effects on the quality of the human environment are highly uncertain or involve unique or unknown risks*. The potential impacts are predictable and do not involve unique or unknown risks. There is a high degree of certainty in predicting impacts associated with fire suppression and management-ignited prescribed burns.

6. *Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration*. The selected alternative implements management-ignited prescribed burning at Big South Fork NRRA,

and as such, represents a decision in principle about future actions within the park. The impacts associated with this decision will benefit vegetation and return the park to a more naturally-functioning state. The use of prescribed fire is not a precedent setting action in the region. The U.S. Forest Service, Daniel Boone National Forest, regularly uses management-ignited prescribed fire as a resource management tool. The adverse and beneficial impacts of its use are well documented in this ecosystem.

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts*. As described in the environmental assessment, there will be cumulative net benefits to soils, vegetation, wildlife, and cultural resources. There could be adverse cumulative impacts to water quality, but only in the event of a catastrophic fire which is considered unlikely under the selected alternative.

8. *Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources*. Implementing the fire management plan will have beneficial impacts to cultural landscapes, four of which are eligible, and have been nominated for the National Register of Historic Places. The National Park Service has received concurrence from the Tennessee and Kentucky State Historic Preservation Officers that, in accordance with Section 106 of the National Historic Preservation Act, the selected alternative will not adversely affect listed or eligible properties.

9. *Degree to which the action may adversely affect an endangered or threatened species or its critical habitat*. In February 2004, the NPS entered into informal Section 7 consultation with the U.S. Fish and Wildlife Service on the FMP. Based on comment letters from their Cookeville, TN and Frankfort, KY offices, NPS prepared a biological assessment on the actions proposed in the FMP. The completed biological assessment was presented to the U.S. Fish and Wildlife Service in July 2004 for their concurrence. On 23 August 2004, NPS received a response concurring with the conclusions in the biological assessment that implementation of the FMP would either not affect or not likely adversely affect listed species. The letter concluded, “We believe that the requirements of section 7 of the Endangered Species Act have been fulfilled.” In addition, the U.S. Fish and Wildlife Service encouraged NPS to consult again if there is substantial new information regarding listed species or if new species are listed in the area. Finally, the agency offered to assist in fire effects monitoring (see attached letter).

10. *Whether the action threatens to violate a federal, state, or local environmental protection law*. This action does not threaten to violate any law.

Impairment

In addition to reviewing the list of significance criteria, the NPS has determined that implementation of the selected alternative will not constitute an impairment to Big South Fork NRRA’s resources and values. This conclusion is based on a thorough analysis of the environmental impacts described in the Environmental Assessment, relevant scientific studies, and the professional judgement of the decision-maker guided by the direction in NPS *Management Policies 2001*.

Public Involvement

The environmental assessment for the FMP was released for public review in January 2004 through local and regional news media, mailings to a list of interested parties, and the Big South Fork NRRA web page for approximately 45 days. As outlined above, three comment letters were received.

Conclusion

The selected alternative does not constitute an action that normally requires preparation of an environmental impact statement. The selected alternative will not have a significant effect on the human environment. Adverse environmental impacts that could occur are minor in intensity. There are no unmitigated adverse impacts on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, or elements of precedence have been identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, it has been determined that there is no significant impact associated with the selected alternative, and that an environmental impact statement is not required for this project and thus will not be prepared.

Signature

Recommended:

_____ _____

Reed E. Detring, Superintendent Date

Approved:

_____ _____

Patricia A. Hooks, Regional Director, Southeast Region Date